Space Weather Forecast

Issued on Friday, 27 January 2023 at 12:11 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Decreasing chance of R1/R2 Radio Blackouts.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity has been Moderate over the past 24 hours with a Moderate class flare observed at 26/1306 UTC from a region which has now rotated behind the west limb. This leaves six numbered sunspot regions on the visible disc. However, all regions are small, weak and magnetically simple, and either stable or showing slight decay.

No Earth-directed CMEs were detected in available imagery. However, a prominence lift-off from the far southwest late on 26th is being modelled to confirm initial analysis that the associated CME is off the Sun-Earth line.

Solar Wind / Geomagnetic Activity: The solar wind gradually as been at mostly elevated levels. The magnetic field strength of the solar wind was largely weak, with the north-south component was weak, fluctuating between southward and northward directions. The resultant geomagnetic activity was Quiet to Unsettled.

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) persisted at background with no solar radiation storms occurring.

Four-Day Space Weather Forecast Summary

Solar Activity: Solar activity is expected to be predominantly Low, with a slight but decreasing chance of Moderate-class flares, as previous large and active regions have now rotated onto the far side.

Solar Wind / Geomagnetic Activity: There are no Earth-directed CMEs in this forecast. Solar winds are currently elevated due to ongoing coronal hole influence. Little change is expected today and much of tomorrow, as tomorrow there is a chance of a further weak coronal hole influences. From day 3 (29th) the solar wind is expected to decline to slightly elevated levels. Geomagnetic activity is expected to be Quiet with Unsettled (Kp 1-3) for much of the period, but with a chance of isolated Active (Kp 4) intervals, and a slight chance of G1/Minor Storms (Kp 5) today and tomorrow.

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) is currently expected to remain at background with no solar radiation storms occurring. However, initially there is just a slight chance of an enhancement through today, due to the residual risk from the large regions that have now rotated onto the far side.

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Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	20	10	5	1
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	Yes	20	10	10	10
Very Active	R3 to R5 X	No	5	1	1	1

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	5	1	1	1
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)

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